

What is claimed is:

1. A tumour-associated antigen (TAA) comprising the amino acid sequence of SEQ ID NO:2.
2. A tumour-associated antigen (TAA) designated R11-ORF-1 consisting of the amino acid sequence of SEQ ID NO:2.
3. An immunogenic protein fragment derived from the TAA of claim 1.
4. The TAA of claim 1 wherein the TAA induces or augments a humoral immune response.
5. The immunogenic protein fragment of claim 3 wherein the protein fragment induces or augments a humoral immune response.
6. The TAA of claim 1 wherein the TAA or a breakdown product thereof is presented by an MHC molecule and induces or augments a cellular immune response.
7. The immunogenic protein fragment according to claim 3 wherein the protein fragment or a breakdown product thereof is presented by an MHC molecule and induces or augments a cellular immune response.
8. The immunogenic protein fragment of claim 7, wherein the amino acid sequence of the protein fragment is selected from the group consisting of SEQ ID NOs:88 to 102.
9. A derivative of the TAA of claim 1 wherein the derivative displays one or more functional activities of the TAA.

10. A method for treating or preventing cancer in an individual comprising administering to the individual the TAA of claim 1, wherein the TAA induces or augments an immune response in the individual against tumor cells which express R11.
- 5 11. A method for treating or preventing cancer in an individual comprising administering to the individual the immunogenic protein fragment of claim 3, wherein the protein fragment induces or augments an immune response in the individual against tumor cells which express R11.
- 10 12. A method for treating or preventing cancer in an individual comprising:
- (a) incubating cytotoxic T lymphocyte precursor cells (CTLs) with antigen presenting cells and the tumor-associated antigen (TAA) of claim 1 wherein the CTLs become activated; and
 - (b) administering the activated CTLs to an individual,
- 15 wherein the TAA induces or augments an immune response in the individual against tumor cells which express R11.
13. A method for treating or preventing cancer in an individual comprising:
- (a) incubating cytotoxic T lymphocyte precursor cells (CTLs) with antigen presenting cells and the immunogenic protein fragment of claim 3 wherein the CTLs become activated; and
 - (b) administering the activated CTLs to an individual,
- 20 wherein the protein fragment induces or augments an immune response in the individual against tumor cells which express R11.
- 25 14. The method of any one of claims 10 to 13 wherein the individual is a human.
15. The method of any one of claims 10 to 13 wherein the cancer is selected from the group consisting of kidney carcinoma, breast carcinoma and pancreatic carcinoma.

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16. The method of claim 10 or 11 wherein the tumor-associated antigen or the immunogenic protein fragment is administered parenterally, topically, orally, or locally.
- 5 17. A pharmaceutical composition comprising the tumor-associated antigen of claim 1; and a pharmaceutically acceptable carrier.
18. A tumour-associated antigen (TAA) designated R11-ORF-2 consisting of the amino acid sequence of SEQ ID NO:3.
- 10 19. An immunogenic protein fragment derived from the TAA of claim 18.
20. The TAA of claim 18 wherein the TAA induces or augments a humoral immune response.
- 15 21. The immunogenic protein fragment of claim 19 wherein the protein fragment induces or augments a humoral immune response.
22. The TAA of claim 18 wherein the TAA or a breakdown product thereof is presented by an MHC molecule and induces or augments a cellular immune response.
- 20 23. The immunogenic protein fragment according to claim 19 wherein the protein fragment or a breakdown product thereof is presented by an MHC molecule and induces or augments a cellular immune response.
- 25 24. The immunogenic protein fragment of claim 23, wherein the amino acid sequence of the protein fragment is selected from the group consisting of SEQ ID NOs:44 to 87.
- 30 25. A derivative of the TAA of claim 18 wherein the derivative displays one or more functional activities of the TAA.

26. A method for treating or preventing cancer in an individual comprising administering to the individual the TAA of claim 18, wherein the TAA induces or augments an immune response in the individual against tumor cells which express R11.
- 5 27. A method for treating or preventing cancer in an individual comprising administering to the individual the immunogenic protein fragment of claim 19, wherein the protein fragment induces or augments an immune response in the individual against tumor cells which express R11-ORF.
- 10 28. A method for treating or preventing cancer in an individual comprising:
- (c) incubating cytotoxic T lymphocyte precursor cells (CTLs) with antigen presenting cells and the tumor-associated antigen (TAA) of claim 18 wherein the CTLs become activated; and
 - (d) administering the activated CTLs to an individual,
- 15 wherein the TAA induces or augments an immune response in the individual against tumor cells which express R11.
29. A method for treating or preventing cancer in an individual comprising:
- (c) incubating cytotoxic T lymphocyte precursor cells (CTLs) with antigen presenting cells and the immunogenic protein fragment of claim 19 wherein the CTLs become activated; and
 - (d) administering the activated CTLs to an individual,
- 20 wherein the protein fragment induces or augments an immune response in the individual against tumor cells which express R11.
- 25 30. The method of any one of claims 26 to 29 wherein the individual is a human.
31. The method of any one of claims 26 to 29 wherein the cancer is selected from the group consisting of kidney carcinoma, breast carcinoma and pancreatic carcinoma.

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32. The method of claim 26 or 27 wherein the tumor-associated antigen or the immunogenic protein fragment is administered parenterally, topically, orally, or locally.

5 33. A pharmaceutical composition comprising the tumor-associated antigen of claim 1 or claim 18; and a pharmaceutically acceptable carrier.

10 34. A pharmaceutical composition comprising one or more immunogenic protein fragments derived from the tumor-associated antigen of claim 1 or claim 18; and a pharmaceutically acceptable carrier.

35. The pharmaceutical composition according to claim 34 further comprising one or more isolated protein fragments derived from a tumor-associated antigen which is not R11.

15 36. The pharmaceutical composition according to claim 34 wherein the protein fragments bind to at least two different HLA types.

20 37. The pharmaceutical composition according to claim 35 wherein the protein fragments bind to at least two different HLA types.

38. An isolated nucleic acid comprising a nucleotide sequence encoding a protein or protein fragment, which protein or protein fragment displays one or more functional activities of the TAA of claim 1.

25 39. An isolated nucleic acid comprising a nucleotide sequence encoding the tumor-associated antigen of claim 2 or claim 18.

30 40. An isolated nucleic acid comprising a nucleotide sequence encoding the immunogenic protein fragment of claim 3 or claim 19.

41. An isolated nucleic acid consisting of the nucleotide sequence of SEQ ID NO:1, or a degenerate thereof.
42. An isolated nucleic acid that hybridizes to a nucleotide sequence of SEQ ID NO:1, under stringent conditions.
43. A recombinant DNA molecule comprising the nucleic acid of any of claims 38 to 42.
44. A recombinant cell containing a recombinant nucleic acid vector comprising the nucleic acid of any of claims 38 to 42.
45. A method of producing a protein comprising:
- (a) growing the recombinant cell of claim 44, such that the protein is expressed by the cell; and
 - (b) recovering the expressed protein.
46. A method for treating or preventing cancer comprising administering to an individual a therapeutic or prophylactic amount of the nucleic acid of any of claims 38 to 42, wherein the nucleic acid induces or augments an immune response in the individual against tumor cells which express R11.
47. A pharmaceutical composition comprising a nucleic acid of any of claims 38 to 42, and a pharmaceutically acceptable carrier.
48. An antibody which specifically binds the tumor-associated antigen of any one of claims 1, 2 or 18.
49. An antibody which specifically binds the immunogenic protein fragment of any one of claims 3, 8, 19 or 24.
50. The antibody of claim 48 which is a monoclonal antibody.

51. The antibody of claim 49 ~~which is~~ a monoclonal antibody.

52. A method for treating or preventing cancer comprising administering the antibody of claim 48, wherein the antibody induces or augments an immune response in the individual against tumor cells which express R11.

53. A method for treating or preventing cancer comprising administering the antibody of claim 49, wherein the antibody induces or augments an immune response in the individual against tumor cells which express R11.

54. A method of diagnosing or screening for cancer comprising detecting or measuring in a sample derived from an individual the level of the TAA of any one of claims 1, 2 or 18, wherein an increase in the level of the TAA or nucleic acid encoding the TAA indicates the presence of cancer associated with the expression of the TAA.

55. A method for detecting tumor cells that express the TAA of any one of claims 1, 2 or 18 in an individual, comprising imaging said individual after administration to said individual of a labeled molecule which specifically binds to the TAA, wherein detection of the labeled molecule above background indicates the presence of a tumor that expresses the TAA.

56. The method of claim 55 wherein the labeled molecule is an antibody or a portion of said antibody containing the binding domain thereof which specifically binds a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:3.

57. The method of claim 55 wherein the labeled molecule is a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:3.

58. A kit comprising in one or more containers a molecule selected from the group consisting of the TAA of any one of claims 1, 2 or 18 or a fragment or a derivative

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